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Serial No. 10/695,439  
Docket No. T36-159872M/KOH

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### REMARKS

Claims 1-3, 5-9, 11, 12 and 25-32 are pending in this application. By this Amendment, claim 5 is amended.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

With respect to the prior art rejections, claims 1, 7, 25-29, 31 and 32 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ota, et al. (JP 04-085972). Claims 2-3, 5-6, 8-9, 11-12 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ota, et al. in view of Fujimoto, et al. (U.S. Patent No. 6,242,761).

The rejections are respectfully traversed in the following discussion.

### I. THE CLAIMED INVENTION

The invention, as described in independent claim 1 for example, is directed to an electrode for a p-type SiC that includes a first electrode material, and a second electrode material of aluminum (Al). The first and second electrode materials exhibit a eutectic reaction at a temperature of 600°C or lower and a layer made of the first electrode material is in contact with a surface of the p-type SiC (Application at page 3, lines 1-4; page 5, lines 17-21).

This structure is important because the formation of the first electrode material having such eutectic characteristics accelerates the eutectic reaction at lower temperatures and provides a better ohmic junction (Application at page 3, lines 5-12; page 4, lines 20-23).

Conventional SiC electrodes, as described in the Background of the present Application, use a combination of titanium (Ti) and aluminum (Al) in an effort to produce an ohmic electrode. However, such conventional SiC electrodes contain a large amount of Al to reduce resistance and need to be heat treated at temperatures of about 1000°C . As a result of these high temperatures devices using such electrodes have reduced functionality and a decreased useful lifecycle caused by deterioration of surface morphology and thermal damage during heat treatment (Application at page 1, line 23-page 2, line 15).

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In contrast, in an exemplary embodiment, this invention may provide an electrode for a p-type SiC having a good surface homology and little thermal damage to the semiconductor crystal layers caused by the formation of the electrode (Application at page 2, lines 18-22).

## II. THE PRIOR ART REJECTIONS

### A. The U.S.C. § 102(b) Ota, et al. Reference Rejection

In rejecting claims 1, 7, 25-29, 31 and 32 as being anticipated by Ota, et al. (Ota), the Examiner alleges that Ota teaches each and every feature recited in the rejected claims. However, Ota fails to disclose or suggest, first and second electrode materials that exhibit a eutectic reaction at a temperature of 600°C or lower and a layer made of the first electrode material is in contact with a surface of the p-type SiC.

In the English language Abstract of Ota, Ota discloses a p-type SiC layer 3 grown on a surface of an n-type SiC substrate 1. An Ni film 4, a Ti film 5, and an Al film 6 are sequentially deposited on the p-type SiC layer 3. Further, an Ni film 8 and an Au film 9 are sequentially deposited on an opposite side of the substrate 1. Thereafter, the laminate is heat-treated in an inert gas to obtain ohmic properties at the electrodes 7 and 10 (Abstract of Ota Figs. 1 and 2.).

The Examiner asserts that Ota discloses that the first electrode material 4 (Ni in Ota) and the second electrode material 6 (Al in Ota) exhibit an eutectic reaction at a temperature of 600°C or lower. However, neither the figures of Ota, nor the English language Abstract disclose or suggest such a combination of features and thus, Ota cannot be relied upon for disclosing or suggesting the claim feature.

Although the Examiner refers to "Column 3 Lines 27 and 34" in rejecting the claims, it is unclear what features the Examiner is alleging are disclosed in the cited un-translated section of Ota.

In the event the Examiner alleges that the cited section of Ota discloses that the first electrode material 4 (Ni in Ota) and the second electrode material 6 (Al in Ota) exhibit an eutectic reaction at a temperature of 600°C or lower, Applicants respectfully remind the Examiner that, when relying on a foreign language document to reject a claim, a translation must be obtained so that the record is clear as to the precise facts the Examiner is relying upon in support of the rejection (see MPEP §706.02.II). If the Examiner has a translation, the

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Examiner must provide the same to Applicants. As an English language translation has not been provided, presumably such a translation has not been obtained by the Examiner and thus, reliance presently on the Ota reference is improper and the Final Rejection is premature.

Further, it appears that the untranslated section of Ota is referring to layers 11 (Ti), 12 (Pt) and 13 (Au) formed on top of the electrode 7 (see Fig. 2 of Ota) and that the temperature of 400°C disclosed in that section refers in some way to those layers.

Accordingly, Ota fails to disclose or suggest first and second electrode materials that exhibit a eutectic reaction at a temperature of 600°C or lower. Instead, it appears that Ota describes a temperature of 900-1000 °C when referring to layers 5-10 (see col. 3, lines 21-25).

Therefore, withdrawal of the rejection is respectfully requested.

#### B. The 103(a) Ota and Fujimoto, et al. Reference Rejection

In rejecting claims 2, 3, 5, 6, 8, 9, 11, 12 and 30 as being obvious over the combination of Ota in view of Fujimoto, et al. (Fujimoto), the Examiner alleges that Ota teaches each and every feature recited in the rejected claims, except for the first electrode material comprising germanium (Ge). In an effort to overcome the admitted deficiency, the Examiner relies on Fujimoto for allegedly teaching that Si is an equivalent electrode material to Ge.

Firstly, Fujimoto fails to make up for the deficiencies of Ota discussed above. Thus, claims 2, 3, 8 and 9 are allowable for their dependency on independent claim 1, for the reasons discussed above, as well as for the additional features recited therein.

Regarding independent claim 5 and its dependent claims 6, 11, 12, and 30, Applicants assert that there are elements in the rejected claims that are not disclosed or suggested by the combination of references.

For example, the combination of references fails to disclose or suggest first and second electrode materials that exhibit a eutectic reaction at a temperature of 600°C or lower and a layer made of the first electrode material is in contact with a surface of the p-type SiC.

As discussed above, in contrast to the pending claims, neither the English language Abstract nor the figures of Ota disclose or suggest first and second electrode materials that exhibit a eutectic reaction at a temperature of 600°C or lower. As Fujimoto is silent

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regarding the claim feature, neither Ota nor Fujimoto (alone or in combination) disclose or suggest the features recited in the rejected claims.

Moreover, even assuming *arguendo* that Fujimoto teaches that Ge is an equivalent electrode material to be used in place of the Pt, Ti, Pt structure, Fujimoto merely teaches the use of the alternative materials in making a nitride compound semiconductor. In other words, Fujimoto does not disclose or suggest an electrode for a p-type SiC.

Further, because of the wide array of materials that Fujimoto suggests may be used in place of the Pt, Ti, Pt layer structure in the nitride compound semiconductor, Fujimoto fails to recognize the criticality of using the first layer (Ge) and the second layer (Al) materials as claimed.

For example, as discussed in the Specification of the present Application, it is important that the first electrode material react with Si and exhibit an eutectic reaction with Al at a relatively low temperature (e.g., 600°C or lower). As Fujimoto does not relate to a p-type SiC, there is no suggestion in Fujimoto to modify Ota as proposed by the Examiner.

Because the combination of references fails to disclose or suggest all of the features recited in the rejected claim, withdrawal of the rejection is respectfully requested.

### III. CONCLUSION

In view of the foregoing, Applicants submit that claims 1-3, 5-9, 11, 12 and 25-32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

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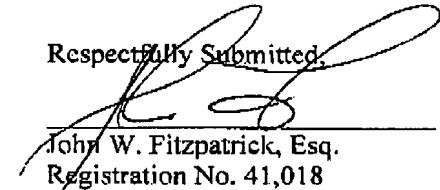
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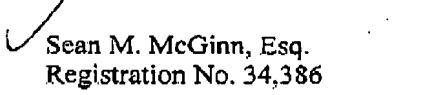
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: 4/18/07

Respectfully Submitted,

  
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